CLAIMS

What is claimed is:

- 1 1. A radio frequency receiver coil adapted to be extended from a catheter, said coil
- 2 comprising a flexible printed wiring board comprising:
- a first end of said flexible printed wiring board extending from an opening in said
- 4 catheter;
- a second end of said flexible printed wiring board extending from said opening in
- 6 said catheter; and
- a connection external to said catheter joining said first end to said second end to
- 8 form a loop.
- 1 2. The coil in claim 1, wherein said flexible printed wiring board has a flat ribbon
- 2 shape.
- 1 3. The coil in claim 1, wherein said first end is more flexible than said second end.
- 1 4 The coil in claim 3, wherein the relative flexibility of said first end with respect to
- 2 said second end causes said first end to take the shape of a round arc when extended from
- 3 said catheter.
- 1 5. The coil in claim 1, further comprising control rods connected to said first end
- 2 and said second end, wherein said control rods are independently moveable.
- 1 6. The coil in claim 1, wherein said flexible printed wiring board includes capacitors
- 2 adjacent said second end.

- 1 7. The coil in claim 1, further comprising insulator sections on said flexible printed
- wiring board, wherein said insulator sections define the shape of said loop.
- 1 8. A radio frequency receiver coil adapted to be extended from a catheter, said coil
- 2 comprising a flexible printed wiring board comprising:
- a first end of said flexible printed wiring board extending from an opening in said
- 4 catheter;
- a second end of said flexible printed wiring board extending from said opening in
- 6 said catheter;
- 7 a connection external to said catheter joining said first end to said second end to
- 8 form a loop; and
- 9 shielding circuitry on said flexible printed wiring board.
- 1 9. The coil in claim 8, wherein said shielding circuitry comprises a Faraday shield.
- 1 10. The coil in claim 8, wherein said first end is more flexible than said second end.
- 1 11. The coil in claim 10, wherein the relative flexibility of said first end with respect
- 2 to said second end causes said first end to take the shape of a round arc when extended
- 3 from said catheter.
- 1 12. The coil in claim 8, further comprising control rods connected to said first end
- 2 and said second end, wherein said control rods are independently moveable.
- 1 13. The coil in claim 8, wherein said flexible printed wiring board includes capacitors
- 2 adjacent said second end.

- 1 14. The coil in claim 8, further comprising insulator sections on said flexible printed
- 2 wiring board, wherein said insulator sections define the shape of said loop.
- 1 15. A method of manufacturing a radio frequency receiver coil, said method
- 2 comprising:
- 3 forming a flexible printed wiring board;
- 4 connecting ends of said flexible printed wiring board together;
- 5 connecting control rods to said flexible printed wiring board, wherein said control
- 6 rods are independently moveable;
- 7 positioning said flexible printed wiring board within a catheter such that the ends
- 8 of said flexible printed wiring board extend from the opening of said catheter; and
- 9 moving said control rods to extend a first end of said flexible printed wiring board
- 10 further out of said opening than a second end of said flexible printed wiring board such
- that the portion of said flexible printed wiring board outside said opening forms a loop.
 - 1 16. The method in claim 15, wherein said flexible printed wiring board has a flat
- 2 ribbon shape.
- 1 17. The method in claim 15, wherein said first end is more flexible than said second
- 2 end.
- 1 18. The method in claim 17, wherein the relative flexibility of said first end with
- 2 respect to said second end causes said first end to take the shape of a round arc when said
- 3 first end is extended further out of said opening than said second end.
- 1 19. The method in claim 15, wherein said process of forming said flexible printed
- 2 wiring board includes forming capacitors adjacent said second end.

- 1 20. The method in claim 15, further comprising forming insulator sections on said
- 2 flexible printed wiring board, wherein said insulator sections define the shape of said
- 3 loop.
- 1 21. A method of manufacturing a radio frequency receiver coil, said method
- 2 comprising:
- 3 forming a flexible printed wiring board;
- 4 forming shielding circuitry on said flexible printed wiring board;
- 5 connecting ends of said flexible printed wiring board together;
- 6 connecting control rods to said flexible printed wiring board, wherein said control
- 7 rods are independently moveable;
- 8 positioning said flexible printed wiring board within a catheter such that the ends
- 9 of said flexible printed wiring board extend from the opening of said catheter; and
- moving said control rods to extend a first end of said flexible printed wiring board
- further out of said opening than a second end of said flexible printed wiring board such
- that the portion of said flexible printed wiring board outside said opening forms a loop.
- 1 22. The method in claim 21, wherein said shielding circuitry comprises a Faraday
- 2 shield.
- 1 23. The method in claim 21, wherein said flexible printed wiring board has a flat
- 2 ribbon shape.
- 1 24. The method in claim 21, wherein said first end is more flexible than said second
- 2 end.

- 1 25. The method in claim 24, wherein the relative flexibility of said first end with
- 2 respect to said second end causes said first end to take the shape of a round arc when said
- 3 first end is extended further out of said opening than said second end.
- 1 26. The method in claim 21, wherein said process of forming said flexible printed
- 2 wiring board includes forming capacitors adjacent said second end.
- 1 27. The method in claim 21, further comprising forming insulator sections on said
- 2 flexible printed wiring board, wherein said insulator sections define the shape of said
- 3 loop.
- 1 28. A catheter comprising:
- 2 an enclosed section having an opening;
- a radio frequency receiver coil adapted to be extended from said opening of said
- 4 catheter, said coil comprising a flexible printed wiring board comprising:
- a first end of said flexible printed wiring board extending from an opening
- 6 in said catheter;
- a second end of said flexible printed wiring board extending from said
- 8 opening in said catheter; and
- a connection external to said catheter joining said first end to said second
- 10 end to form a loop.
 - 1 29. The catheter in claim 28, wherein said flexible printed wiring board has a flat
- 2 ribbon shape.
- 1 30. The catheter in claim 28, wherein said first end is more flexible than said second
- 2 end.

- 1 31. The catheter in claim 30, wherein the relative flexibility of said first end with
- 2 respect to said second end causes said first end to take the shape of a round arc when
- 3 extended from said catheter.
- 1 32. The catheter in claim 28, further comprising control rods connected to said first
- 2 end and said second end, wherein said control rods are independently moveable.
- 1 33. The catheter in claim 28, wherein said flexible printed wiring board includes
- 2 capacitors adjacent said second end.
- 1 34. The catheter in claim 28, further comprising insulator sections on said flexible
- 2 printed wiring board, wherein said insulator sections define the shape of said loop.
 - 35. A catheter comprising:
- 2 an enclosed section having an opening;
- a radio frequency receiver coil adapted to be extended from said opening of said
- 4 catheter, said coil comprising a flexible printed wiring board comprising:
- a first end of said flexible printed wiring board extending from an opening in said
- 6 catheter;

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- 7 a second end of said flexible printed wiring board extending from said opening in
- 8 said catheter;
- a connection external to said catheter joining said first end to said second end to
- 10 form a loop; and
- shielding circuitry on said flexible printed wiring board.
 - 1 36. The catheter in claim 35, wherein said shielding circuitry comprises a Faraday
 - 2 shield.

- 1 37. The catheter in claim 35, wherein said first end is more flexible than said second
- end.
- 1 38. The catheter in claim 37, wherein the relative flexibility of said first end with
- 2 respect to said second end causes said first end to take the shape of a round arc when
- 3 extended from said catheter.
- 1 39. The catheter in claim 35, further comprising control rods connected to said first
- 2 end and said second end, wherein said control rods are independently moveable.
- 1 40. The catheter in claim 35, wherein said flexible printed wiring board includes
- 2 capacitors adjacent said second end.
- 1 41. The catheter in claim 35, further comprising insulator sections on said flexible
- 2 printed wiring board, wherein said insulator sections define the shape of said loop.
- 1 42. A method of performing magnetic resonance imaging (MRI), said method
- 2 comprising:

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- 3 inserting a catheter into an item, such that an opening at one end of said catheter
- 4 is positioned within said item;
- 5 inserting a radio frequency coil comprising a flexible printed wiring board into
- 6 said item through said catheter;
- 7 moving a first control rod to extend a first end of said flexible printed wiring
- 8 board further out of said opening than a second end of said flexible printed wiring board,
- 9 such that the portion of said flexible printed wiring board outside said opening forms a
- 10 loop;
- generating a radio frequency signal outside said item; and
- sensing said radio frequency signal using said radio frequency coil.

- 1 43. The method in claim 42, wherein said flexible printed wiring board has a flat
- 2 ribbon shape.
- 1 44. The method in claim 42, wherein said first end is more flexible than said second
- 2 end.
- 1 45. The method in claim 44, wherein the relative flexibility of said first end with
- 2 respect to said second end causes said first end to take the shape of a round arc when said
- 3 first end is extended further out of said opening than said second end.
- 1 46. The method in claim 42, wherein said flexible printed wiring board includes
- 2 capacitors adjacent said second end.
- 1 47. The method in claim 42, wherein insulator sections on said flexible printed wiring
- 2 board define the shape of said loop.